Inventor: **Hirose** Application Number: **09/782,339** Date: **2/13/01**

Cl. #	Dep. on	Limitation	Tonelli 12/99 US 5,997,745	JP10-305216 11/98	Supporting References
1	--	Apparatus comprising	Yes		
		Plurality of modules in multistage	Fig 1	Fig 1, 2	
		Each module with porus support and polyamide skin layer on it	4(26-50)	Yes	
		Includes one final and one pre-final stages	Fig 1	Yes	
		Portion of permeate from prefinal to final stage	Fig 1	--	
		Rest prefinal permeate discharged with final stage perm	Fig 1	--	
JP 2	1	Perm water from final and prefinal are mixed and discharged	3(1-28) obvious	Do	
B 3	1	Ion conc of perm supplied to not supplied to final stage 1:2 to 1:10	**, obvious , bray	--	Bray 4,046,685 5(4-35), obvious
4	1	Perm water to final stage alkaline	Fig 1, 8(5-10)	--	
5	1	The pH of the perm water to final stage is 8-12	Do	--	
B 6	1	Perm water to final stage is from conc end of one pre-final module supplying perm water to final module	Obvious		Bray 4,046,685 5(4-35), obvious
B 7	1	Further comprising pr vessel	Obvious		Bray 4,046,685 5(4-35)
		Plurality of pre-final module	Fig 1		Do
		Spiral wound modules	4(26-50)		Do
		..connected by water (perm) pipes	Obvious, bray		Do
		Contained on a pr vessel	Do		Do
		Raw and permeate water from one end	Do		Do
		Conc and perm from the other end	Do		Do
		Perm from other end fed to final stage	Do		Bray 4,046,685 5(4-35),

					obvious
8	7	Water collecting pipe partitioned to make raw water side and perm water side perm separate	Do		Bray 4,046,685 5(4-35)
9	1	Further comprising plurality of pr vessesl in multi stage	Obvious		Do
		One ist stage, and at least one after ist stage	Fig 1		Do
		Plurality of modules for at least one pre-final module	Fig 1		Do
		Modules spiral wound on pipe	4(26-50)		Do
		Prefinal modules connected by water pipes			Do
		Plurality of pre-final modules in plurality of pr vessels	Obvious		Do
		Ist stage vessel with raw water	Fig 1		Do
		At least one pr vessel subsequent to ist stage supplied with conc from at least one preceding vessel	Fig 1	Obvious with bray	Do
10	9	3 pr vessels in 3 stages,	Fig 1	Obvious with Tonelly	
		Per from 2nd stage pr vessel and/or 3rd stage pr vessel to final stage composite RO module	Fig 1	Do	EP 1 136 116 A1, 8/2000
11	1	Pre-final module rej >99%, perm flux 0.2m3/m2/day at 6.5 pH, 3.5% feed and at 25C and 5.5 Mpa (55atm = 800psi)	-- obvious, EP	Yes, ex. Flux	EP 1 136 116 A1, 8/2000
12	1	99.5%, 0.3 m3/m2/day, rest as in 11	--do	Yes, except flux	EP 1 136 116 A1, 8/2000
13	1	Boron rej 80%	--do		EP 1 136 116 A1, 8/2000
14	1	Boron rej 90%	--do		EP 1 136 116 A1, 8/2000
15	1	Salt 98% at 0.5m3/m2/day at 0.05% feed, 25C, 6.5 pH, 0.75 Mpa (7.5 atm = 110 psi)	--do	Yes	EP 1 136 116 A1, 8/2000
16	1	99%, 0.7m3/m2/day, rest as in 15	--do	Yes	EP 1 136 116 A1, 8/2000
17	3	Raw water TDS 1%	--do	Yes	
18	17	Sea water	--do	Yes	EP 1 136 116

					A1, 8/2000
19	3	Raw = sea, per =/< 1 mg/L boron	--do	Obvious Tonelly	EP 1 136 116 A1, 8/2000
20	1	Polyamide skin has Br atoms	--do	yes	EP 1 136 116 A1, 8/2000

** contradicts the specification and examples. In spec and examples, the "supplied conc" is greater than the "not supplied conc". Reversing the ratios would meet the specification.